190

Number 190 • November 16, 1990

# Advance Data

From Vital and Health Statistics of the National Center for Health Statistics

## Developmental, Learning, and Emotional Problems

### Health of Our Nation's Children, United States, 1988

by Nicholas Zill, Ph.D., Child Trends, Inc., and
Charlotte A. Schoenborn, M.P.H., Division of Health Interview Statistics

## Introduction

As many of the infectious diseases that affected children in the past are conquered or ameliorated, a growing share of pediatric practice involves developmental delays, learning difficulties, and emotional and behavioral problems. These conditions, and others such as allergies, asthma, and eating disorders, have been labeled the "new morbidity of childhood" (1). All of these conditions have a substantial psychological component, and none fits easily into the physical disease paradigms with which medicine is used to dealing. There are several reasons why these conditions should be of concern to public health professionals and policymakers.

To begin with, these kinds of conditions appear to be quite prevalent and may be becoming more so (2; 3, pp. 32–34). Increases in childhood psychological disorders have been attributed to the growing proportions of children who experience parental divorce, were born outside of marriage (4), or are raised in conflict-filled families or low-income, low-education, single-parent households. Childhood learning and behavior problems may also be multiplying because of the increased survival rate of extremely low-birth-weight babies (5), the possible effects of environmental contamination (6), and the rising numbers of babies born to crack-addicted mothers (7).

The fact that many young people are affected by developmental delays, learning disabilities, or emotional problems does not mean that such disorders are transient or inconsequential; some have profound and lasting effects on family functioning and children's life chances. These conditions often interfere with a child's academic success and peer relationships and put a strain on parental resources and equanimity. Developmental disorders and mental illness in children are also costly and burdensome to society, requiring special services in schools and other institutions and sometimes necessitating long-term care at State expense (8).

Another area of concern is that the medical care system is not yet well equipped to handle these kinds of childhood problems. The etiology of most developmental and behavioral disorders is not well understood. Although there is evidence that counseling and treatment can help (9,10), there is uncertainty and sometimes lack of consensus about appropriate modes of treatment for specific disorders—for example, disputes over the use of the drug Ritalin in treating hyperactive youngsters (11). Many family physicians have not been adequately trained to recognize and deal with these types of problems, and procedures for referring children for psychological diagnosis and treatment are not standardized. There is believed to be a substantial group of young people with developmental or behavioral disorders whose problems go untreated and perhaps even unrecognized (12, pp. 24–27). There is also concern that, although conduct problems of middle-class white youths are handled within the mental health system, the same sorts of problems among lower class black or Hispanic youths often go untreated, only to be dealt with eventually by the criminal justice system.

Reliable national data on the incidence and prevalence of developmental and behavioral

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service
Centers for Disease Control
National Center for Health Statistics
Manning Feinleib, M.D., Dr. P.H., Director

HE 20.6209/3:

READEX FICHE best copy available

conditions in childhood have been hard to come by, partly because of definitional ambiguities and changes in medical and educational terminology (12, chapter 2). Prevalence estimates based on small and unrepresentative samples have tended to vary over an implausibly wide range—for instance, from 6 percent to 37 percent in one review of studies of emotional and behavioral problems in children (2). In addition, earlier estimates have often been ambiguous with respect to the time period involved.

In this report, data from the 1988 National Health Interview Survey of Child Health (NHIS–CH), conducted by the National Center for Health Statistics (NCHS), are presented. Statistics are given on the proportions of young people 17 years of age and under who were reported by their parents to have ever had (a) a delay in growth or development, (b) a learning disability, or (c) an emotional or behavioral problem that lasted 3 months or more or required psychological treatment. Information is presented on when the condition was first noticed and whether treatment, counseling, or special educational services were received for it. Survey-based prevalence estimates are compared with estimates based on clinical studies, U.S. Department of Education data on the receipt of special education services, and earlier health survey data on the receipt of psychological help by children and adolescents. Variations in prevalence by age, sex, family income, mother's education, race, Hispanic origin, and family structure are examined. Alternative explanations for observed group differences and for changes over time in the receipt of counseling and educational services for these conditions are discussed.

## Data and methods

### Survey procedures

The source of the data reported here is the 1988 National Health Interview Survey of Child Health. This was a survey of 17,110 children 17 years of age and under that was cosponsored by the Office of Maternal and Child Health, the National Institute of Child Health and Human Development, and NCHS (13, pp. 224–250). NCHS conducts the National Health Interview Survey to collect data on the health status and medical care use of the U.S. population, using a probability sample, drawn by the U.S. Bureau of the Census, of persons living in households in the United States (14,15). For NHIS–CH, there was a further random selection of one child per family in any family with children 17 years of age and under at the time of the survey.

The data collection method consisted of in-person interviews by trained U.S. Bureau of the Census interviewers with an informed adult member of the family, usually the mother. In about 95 percent of cases, the respondent was a parent of the sample child, and in this report, the respondent is often referred to as the parent. The overall completion rate for the child portion of the survey was 91 percent. The interviewers obtained a considerable amount of background information on the family and measures of the child's physical health, behavioral and emotional adjustment, school performance, and receipt of medical and psychological care. All data are based on reports by the adult respondent. The survey questionnaire has been published (13, pp. 224–250), and a public use data tape is available through the Division of Health Interview Statistics of NCHS. A similar National Health Interview Survey of Child Health was conducted in 1981 (16,17).

### Questions on developmental conditions

Parent respondents to the 1988 NHIS–CH were asked the following questions:

- "Has _____ ever had a delay in _____'s growth or development?"
- "Has _____ ever had a learning disability?"
- "Has _____ ever had an emotional or behavioral problem that lasted 3 months or more?"

The first question was put to parents of children of all ages, but the latter two were put only to those whose children were ages 3 years and over.

If the respondent answered affirmatively to any of the questions, she or he was asked a series of followup questions on when each condition was first noticed, whether the child was treated for the condition (ever and in the last 12 months), the effects of the condition on school attendance and need for special education, and whether any medication was taken for the condition.

Parents of children ages 3–17 years who had not reported that their child had a developmental, learning, or behavioral problem were asked, "Has _____ ever seen a psychiatrist, psychologist, doctor, or counselor about any emotional, mental, or behavioral problem?" Those who responded negatively to this question were asked, "During the past 12 months, have you felt, or has anyone suggested, that _____ needed help for any emotional, mental, or behavioral problem?" If the parent answered affirmatively to either question, the child was counted as having had an emotional or behavioral condition, even if the parent had answered the initial question about such conditions in the negative.

This report focuses on the reported lifetime prevalence of developmental, learning, and behavioral problems in the overall child population and in selected demographic and social groups. Only limited information from the followup questions is presented.

Before reporting the prevalence figures, it might be well to mention some of the specific conditions that the survey designers thought would be elicited by each question. It was expected that respondents who answered the question on delay in growth and development in the affirmative would consist partly of parents whose children had limited or temporary deficits in growth or development, perhaps associated with premature birth or an early illness or injury, and partly of parents whose

children had severe and long-lasting deficits, such as those produced by Down syndrome or other chromosomal abnormalities, hereditary factors, prenatal infection, birth injury, or childhood diseases.

Ideally, the item on learning disability would be answered affirmatively for children who had exceptional difficulty learning to read, write, or do arithmetic but whose learning problems did not stem from mental retardation, impairment of sight or hearing, emotional problems, or lack of cultural and educational opportunities. That is the technical definition of learning disability (18, p. 395). It is likely, however, that parents applied the term not only to children with specific incapacities, such as dyslexia, but also to some children with deficits in general intelligence or behavioral problems that interfered with their learning.

The reader may wonder why the interviewers did not specifically ask about mental retardation. The reason is that there was such a question in the 1981 NHIS–CH, and it produced only a handful of positive responses. Nowadays the term "mentally retarded" is apparently seen as limiting or stigmatizing by parents of children with developmental disorders, and many are reluctant to use it (19). Clinicians have also become hesitant about applying the term, especially to minority children. It was hoped that the "developmental delay" and "learning disability" questions would result in more of these children being identified in the 1988 survey, and this seems to have been the case.

The question on emotional or behavioral problems was meant to identify children with common psychological syndromes (20), such as aggressive or antisocial conduct (21,22), attention-deficit hyperactivity disorder (23), phobias and anxiety disorders (24), childhood depression (25), and adjustment reactions to traumatic events such as parental divorce (26). More severe conditions such as autism and schizophrenia would also be picked up, but in very small numbers, given the rarity of these conditions (18, chapter 12).

Originally, in an open-ended followup question, parents were asked to describe the specific emotional or behavioral disorders their children had. This question was deleted in pretesting when many of the responses turned out to be vague or to refer to the situation that led to the emotional reaction rather than to the reaction itself. Analysis of responses to related questions in NHIS–CH, such as a 28-item Behavior Problems Index and items in the core NHIS questionnaire, should help to clarify the kinds of conditions that were identified by these questions.

## Prevalence of problems

According to their parents, 4.0 percent of U.S. children ages 17 years and under have had a delay in their growth or development (table 1). This means that an estimated 2.5 million children have developmental delays. In addition, 6.5 percent of children ages 3–17 years, or 3.4 million, have had a learning disability (table 2). Also, 13.4 percent of children ages 3–17 years, or 7 million, have had an emotional or behavioral problem that lasted 3 months or more or required psychological treatment (table 3). When the items are combined, the result is that a total of 19.5 percent of children ages 3–17 years, or nearly 10.2 million, have had one or more developmental, learning, or emotional disorders (table 4). When the 488,000 children ages 2 years and under who had developmental delays are added in, the total number affected by one or more of these conditions comes to almost 10.7 million.

By way of comparison, here are the estimated numbers of American young people having some of the chronic physical conditions that are common in childhood: chronic bronchitis, 3.5 million; asthma, 3.2 million; dermatitis, 2.2 million; orthopedic impairments, 1.8 million; heart murmurs, 1.1 million (13, table 62). Clearly, the psychological disorders rank among the most prevalent health conditions of modern childhood.

Another indication of the importance of these conditions in the overall child health picture is that 35 percent of children ages 3–17 years who were currently described as being in fair or poor health had a developmental, learning, or behavioral problem (table 4).

## Treatment

Parents who reported that their child had a delay in development, a learning disability, or an emotional or behavioral problem were asked whether the child "has ever received treatment or counseling" for the condition (table 5). Two percent of all children ages 17 years and under had received treatment or counseling for a delay in growth or development. This amounted to 49 percent of those reported to have had such a delay. One percent of all children were reported to have received treatment for developmental delays within the previous 12 months.

About 5 percent of all children ages 3–17 years, or more than three-quarters of those with learning disabilities, had received treatment or counseling for their disabilities. More than 3 percent of children ages 3–17 years were reported to have received treatment for learning disabilities within the previous 12 months.

Ten percent of all children ages 3–17 years, or about three-quarters of those with emotional or behavioral problems, had received treatment or counseling for these problems. Five percent were reported to have received this help within the previous 12 months.

## Receipt of special educational services

Parents who reported that their child had one of the subject conditions were also asked whether the condition made it necessary for the child "to attend special classes, or

a special school, or get special help at school" during the past 12 months. Less than 1 percent of children ages 6–17 years had received special educational services because of delays in growth or development. This amounted to about 23 percent of those reported to have had such delays.

About 5½ percent of all school-aged children, or about 70 percent of those reported to have learning disabilities, received special educational assistance for their disabilities. Approximately 1.7 percent of school-aged children, or one-quarter of those reported to have emotional or behavioral problems that had lasted 3 months or more, received special educational help because of these problems. (The question about special educational services was asked only of parents who reported that their child had an emotional or behavioral problem that had lasted 3 months or more.)

## Comparisons with other data sources

Questions about children's psychological disorders have rarely been asked of parents in large national sample surveys of children. Consequently, there are few earlier data points that are precisely comparable with those from the National Health Interview Survey of Child Health. Prevalence estimates based on parental reports in NHIS–CH can be compared with estimates based on other sources of information, such as clinical studies or school-based data on children receiving special educational services for specific types of handicaps. In addition, there are earlier survey data on the receipt of psychological help by children. Some of this comparative information is summarized in the following sections.

### Developmental delays

As mentioned in the introduction, it was expected that the question about delays in growth or development would identify children with mental retardation and other profound developmental disorders, as well as some with less devastating abnormalities. Before the term "mentally retarded" became unfashionable, it was common to see estimates that the retarded constituted 3–4 percent of the overall population (27). In recent years, the term has been restricted to more severe cases, and prevalence estimates of 1–2 percent are now given (20, p. 189). Autism and other pervasive developmental disorders are comparatively rare, with estimates of their prevalence ranging from around 10 to 15 cases per 10,000 population (20, p. 189).

Data from the U.S. Department of Education show that the proportion of students receiving special educational services for the mentally retarded was 1.6 percent of total public school enrollment in 1987, down from 2.2 percent in 1977 (28, table 61). In contrast, the proportion of children in NHIS–CH who were reported to have developmental delays and to have received special educational services for them was just 0.9 percent. Thus, there would appear to have been some underidentification or underreporting of retardation in NHIS–CH. It is also possible that some parents with retarded youngsters described their children as having learning disabilities. As described below, the under-identification of retardation is likely to have been concentrated among black and Hispanic children.

### Learning disabilities

In contrast to the apparent underreporting of retardation, the proportion of children who were reported in NHIS–CH to have learning disabilities was higher than the proportion known to be receiving special educational services according to school-records data. Of total public school children, 4.8 percent were recorded as receiving special educational services for learning disabilities in 1987, more than double the 1.8 percent recorded in 1977 (28, table 61). As noted above, however, 6.5 percent of all children ages 3–17 years were reported in the 1988 NHIS–CH to have learning disabilities, and 5.5 percent of those ages 6–17 years were reported to have attended special classes or a special school because of such disabilities.

The relatively small discrepancies between the survey estimates and the school-records figures may represent children who were in the process of being qualified for special education services or inaccuracies in school records. They may also represent misunderstanding by some parents as to the types of help their children were getting in school. Figures are not available from the U.S. Department of Education on the number of children who were in need of special educational services but did not receive them. Despite the apparent excess of learning disabilities in the survey data, there is evidence (discussed below) that learning disabilities were underidentified by minority parents.

### Emotional and behavioral problems

The Institute of Medicine, the Office of Technology Assessment, and other groups have estimated that 12–15 percent of U.S. children suffer from mental disorders (3; 12, chapter 2). These estimates would appear to be in close agreement with the figure of 13.4 percent of children with emotional or behavioral problems found in NHIS–CH. However, the clinical estimates are ambiguous with respect to the conditions they include and the time period to which they refer. Does the figure of 12–15 percent refer to children who have ever had a mental disorder, to those who have had one within the last year, or to those who have one right now? A close look at the clinical studies on which the estimates are based also shows a good deal of unexplained variation from study to study. NHIS–CH and clinical studies agree, though, in finding behavioral disorders to be among the most prevalent chronic conditions of childhood.

An earlier survey of child health, the 1981 National Health Interview Survey, included a question about the receipt of psychological help by children and youths. In that survey, it was found that 6.5 percent of children ages 3–17 years had seen a psychologist or psychiatrist at some point about an emotional, mental, or behavioral problem (29). The comparable proportion in the 1988 NHIS–CH was 10 percent, indicating that the use of psychological assistance for children had increased by more than 50 percent between the two surveys. (Part of the increase may have been due to differences in the questions used in the two surveys, but it is unlikely that this is the full explanation for the rise in the use of psychological help.)

Although serious emotional and behavioral problems appear to be widespread among today's youth, relatively few receive special educational assistance for these problems. According to U.S. Department of Education data, only about 1.0 percent of public school students were recorded as receiving special education for the seriously emotionally disturbed in 1987 (28, table 61). This was less than the 1.7 percent of children ages 6–17 years who were reported in NHIS–CH to have attended special classes for emotional or behavioral problems (table 5). Again, the discrepancy may have been due to the processing of children for special education, to inaccuracies in school records, or to misunderstanding by parents as to what kinds of help their children were getting in school. There are also conditions, such as the attention deficit-hyperactivity syndrome, that straddle the boundary between behavioral problems and learning disabilities.

## Age trends

### Developmental delays

It was expected that almost all of the delays in growth and development would have occurred or been evident in early childhood. Therefore, little or no increase in the prevalence of delays after the first years of life was anticipated. Except for minor sampling fluctuations, this is what was found. The proportion of children with developmental delays was 4.3 percent for 2 years of age and under, 4.4 percent at ages 3–5 years, 4.1 percent at ages 6–11 years, and 3.6 percent in the adolescent years, ages 12–17 (table 1).

When parents were asked the child's age at the time they first noticed the developmental delays, 25 percent of those who reported delays said they had been apparent since birth (table 6). Forty-five percent of delays were noticed before the child's first birthday. The median age at which delays in growth or development were noticed was 1 year 2 months (table 7).

### Learning disabilities

In contrast to developmental delays, most learning disabilities are not fully apparent until the child gets to school and starts trying to read, write, and calculate. Therefore, a substantial rise in the prevalence of learning disabilities as children reached school age was expected. This is what was found. The proportion of children with learning disabilities jumped from 1.6 percent at ages 3–5 years to 6.8 percent in the elementary school ages, 6–11 years. There was a further increase, to 8.8 percent, in the junior high and high school ages, 12–17 years (table 2).

When parents were asked at what age their children's learning disabilities were first noticed, only about 6 percent of those who reported learning problems said they had been apparent since birth or before the child's first birthday (table 6). One-quarter of the learning disabilities became apparent during the nursery school or kindergarten years (ages 3–5 years), and another 45 percent were first noticed in early elementary school (ages 6–8 years). The median age at which learning disabilities were noticed was 6 years 7 months (table 7). Learning disabilities were not picked up until late elementary or secondary school for about 16 percent of the children.

### Emotional and behavioral problems

The most severe and pervasive disorders of childhood tend to appear before the age of 2½ years, as with autism, or after the age of 12 years, as with schizophrenia (18, p. 420; 30). Less drastic emotional and behavioral problems may occur in children of any age, depending on the timing of stressful life events and the unfolding of developmental processes that are not well understood. Some of these problems are resolved within a few months, perhaps to reemerge at a later age. Others continue for years or indefinitely.

Thus, the cumulative proportion of children who have ever had emotional or behavioral problems should increase fairly steadily with age. Continued increases were found in NHIS–CH, although the rate of increase was found to decline after the early elementary years. The proportion of children who had ever had an emotional or behavioral problem rose from 5.3 percent at ages 3–5 years, to 12.7 percent at ages 6–11 years, to 18.5 percent at ages 12–17 years (table 3).

Parents who reported that their children had emotional or behavioral problems that had lasted 3 months or more were asked at what age the emotional or behavioral problems were first noticed. Only 5 percent said it was before the child's first birthday (table 6). Less than 15 percent of the emotional problems were noticed during the first 3 years of life. One-quarter emerged during the preschool years (3–5) and another quarter, during the early elementary years (6–8). The rate of problem emergence tapered off in the late elementary years, with 15 percent of the conditions appearing during ages 9–11 years. Twenty-two percent became evident during the adolescent years (12–17). The median age at which persistent emotional or behavioral problems were noticed was 7 years 2 months (table 7).

Based on evidence from the National Survey of Children (31) and other earlier surveys, it seems possible that the increase in the lifetime prevalence of behavioral problems with age would be more pronounced were it not for parental forgetting. When responding to surveys, parents sometimes do not recall emotional problems that their children had several years earlier, even when those problems were severe enough to require professional assistance.

### Combined problems

As would be expected from the above findings, the combined lifetime prevalence of developmental, learning, and emotional problems increased substantially with age, more than doubling from ages 3–5 years (9.5 percent) to 12–17 years (25.2 percent), as shown in table 4. One teenager in four was reported to have had a developmental delay, learning disability, or emotional or behavioral problem.

## Sex differences

Previous research has shown that males are more vulnerable than females to a variety of developmental disorders. Sex differences are especially pronounced for learning disabilities, with boys outnumbering girls in special education classes by more than 2 to 1. Male pupils also outnumber females in classes for the mentally retarded, but by smaller margins (32, table 6). Sex differences in emotional and behavioral problems depend on the type of problem involved, with males predominating among youths who show aggressive or hyperactive conduct, but with sex ratios being more nearly equal or girls predominating for problems such as depression and anxiety (33). Overall, the prevalence of emotional and behavioral problems tends to be higher among boys (18,34).

The results of the 1988 NHIS–CH were generally consistent with these earlier findings. Differences were relatively slight for developmental delays, however, with males exceeding females by only 11 percent overall—4.2 percent of males versus 3.8 percent of females were reported to have had delays in growth or development—and some age groups showing minimal differences or even reversals (table 1).

In contrast, the rate of learning disabilities was almost twice as high among males as among females, 8.6 percent versus 4.4 percent for ages 3–17 years. By adolescence, more than twice as many males as females—12.1 percent versus 5.2 percent—were described as having learning disabilities (table 2).

For emotional and behavioral problems, the overall prevalence was 36 percent higher among males: 15.4 percent versus 11.3 percent for females. Sex differences were most pronounced for children of elementary school age (6–11 years), with 15.6 percent of the boys versus 9.8 percent of the girls in this age range experiencing such problems (table 3).

For all three types of problems combined, the prevalence for males exceeded that for females by 43 percent: 22.9 percent compared with 16.0 percent. Among adolescents (ages 12–17 years), the male rate exceeded the female rate by 40 percent: 29.2 versus 20.8 percent (table 4). Nearly 3 teenage boys in 10 had had a developmental delay, learning disability, or emotional or behavioral problem.

## Differences related to parental education and family income

There are several reasons for expecting learning difficulties and emotional and behavioral problems to be more common among children from families with low parental education and income levels than among those with more educated and affluent parents. Children in the former group are less likely to receive intellectual stimulation at home (35,36) and more likely to be exposed to a variety of environmental hazards (37–39). In addition, it could be argued that, because of a tendency to downward social mobility, parents with low intelligence or emotional disorders are more likely to be found among lower education and income groups (40).

Education- and income-related differences in achievement indicators such as grade repetition, cognitive test scores, remedial instruction and special education placement, and high school completion have consistently been found (32,41–43). Similar differences in children's emotional and behavioral problems have been observed, although the findings are not as extensive and consistent (32,34,44). The evidence for class-related differences in developmental delays is even less clear cut. Chromosomal abnormalities, prenatal infections, and birth complications can occur among infants of any class, and some developmental disabilities, such as autism, are actually more common among middle and upper class families (18, pp. 425–426).

One phenomenon that complicates the measurement of class-related differences in child development through household surveys is that better educated parents tend to be more "productive" survey respondents than do less educated parents (45). If developmental problems are more common among children of less educated parents, differences in comprehension and recall will tend to reduce class-related differences, because better educated parents report proportionately more of their children's problems to survey interviewers than do less educated parents. As a consequence, income- and education-related differences are usually more pronounced when problem indicators are based on test scores, teacher reports, or official records than when they are based on survey reports of parents.

### Developmental delays

Differences across parental education and income groups in the proportion of children who had delays in growth or development were relatively small and, for the most part, not statistically significant

(table 1). Among family income groups, only the contrast between the lowest category—less than $10,000 per year—and the highest—$40,000 or more per year—was statistically reliable. Of children in the former group, 5.4 percent had developmental delays, but of those in the latter group, 3.9 percent had delays.

### Learning disabilities

Of the three types of childhood problems discussed here, learning disabilities showed the strongest relationships with parental education and family income: The prevalence of learning problems decreased with increasing years of education or increasing income. Thus, the proportion of youngsters reported to have learning disabilities was 8.7 percent for children of mothers with less than 12 years of schooling, 6.8 percent for those whose mothers had 12 years of education, and 4.9 percent for children whose mothers had more than 12 years of schooling. Similar patterns were observed in all age groups (table 2).

The prevalence of learning disabilities was 8.4 percent among children from families with incomes less than $10,000 per year and decreased as income rose, reaching 5.8 percent among children in families with incomes of $40,000 or more. Except for a few nonsignificant fluctuations, similar patterns were found for all age groups (table 2).

### Emotional and behavioral problems

The prevalence of childhood emotional and behavioral problems showed significant variation across family income groups, with children from less advantaged backgrounds standing a somewhat greater chance of exhibiting such problems. The prevalence declined from 15.8 percent among children from families with incomes less than $10,000 per year to 12.8 percent among those with family incomes of $40,000 or more. Income-related differences were more pronounced among elementary school children and adolescents than among preschoolers (table 3).

The total proportion of emotional or behavioral problems did not vary meaningfully with parental education. However, when those problems that had persisted for 3 months or more were examined, some significant differences were found across maternal education groups. The prevalence of persistent problems was 7.2 percent among children whose mothers had not completed high school, 6.1 percent among children of high school graduates, and 5.5 percent among children whose mothers had more than 12 years of schooling. Similar patterns were observed within specific age groups, although with some fluctuations.

### Combined problems

Significant variation by family income, but not by parental education, was found when all three types of conditions were combined. The proportion of children ages 3–17 years with one or more of these problems fell from 22.8 percent among children in families with incomes below $10,000 to 18.6 percent among those with family incomes of $40,000 or more (table 4). The proportion was 20.3 percent among children of mothers with less than 12 years of education and 19.3 percent among those whose mothers had more than 12 years of schooling.

It seems likely that differences in childhood learning and behavioral problems across education and income groups were understated because of the association between these variables and minority ethnic status. As described in the next section, there was an apparent underreporting of children's learning and behavioral problems by black and Hispanic parents.

## Differences by race and Hispanic origin

In the 1988 National Health Interview Survey of Child Health, black parents were less likely than white parents to report that their children had developmental delays or emotional problems and about equally likely to report learning disabilities. Hispanic parents also reported slightly fewer developmental problems in their children than did non-Hispanic parents. Thus, the overall prevalence of developmental delays was 2.1 percent among black and 4.4 percent among white children; 3.4 percent among Hispanic and 4.2 percent among non-Hispanic children (table 1).

The proportion ages 3–17 years with learning disabilities was 6.2 percent among black and 6.7 percent among white children; 5.8 percent among Hispanic and 6.6 percent among non-Hispanic children (table 2). The proportion ages 3–17 years reported to have had emotional or behavioral problems was 10.3 percent among black and 14.2 percent among white children; 12.0 percent among Hispanic and 13.6 percent among non-Hispanic children (table 3). When all three types of childhood conditions were combined, the proportion of children with one or more conditions was 14.9 percent among black and 20.7 percent among white children; 17.2 percent among Hispanic and 19.9 percent among non-Hispanic children (table 4).

On the average, black and Hispanic families have lower parental education and income levels than white non-Hispanic families (28). In addition, black children are known to be overrepresented among low-birth-weight babies, children in single-parent and foster-care families, reported abuse and neglect cases, special education and remedial instruction classes, and pupils who are suspended or expelled from school for conduct problems (28,32). For these reasons, one would expect black and Hispanic children to show a higher than average prevalence of learning and emotional problems and at least an average prevalence of developmental delays.

One explanation for the observed results is that black and Hispanic parents were less familiar than nonminority parents with the terms

used in the three questions listed above and so were apt to answer them in the negative. Such lack of familiarity could be a product of lower literacy levels, lower quality pediatric care and educational counseling, or both. Differential recall of past events may also have played a role.

Differences in reporting by race or ethnic group have been found in other areas of child health. For example, black parents typically report fewer acute illnesses, injuries, and restricted-activity days for their children than white parents do, even though black parents are more likely to rate their children as being in poor or fair health (46).

## Differences by family structure

Previous research has shown that children in single-parent families are at greater risk of emotional problems and academic difficulties than those in intact, two-parent families (26,47). The differences are partly due to the stress of family conflict and disruption and the deprivations of a single-parent upbringing. Single-parent families also tend to have lower parental education and income levels than two-parent families. Children in stepfamilies show an elevated risk of maladjustment and school failure, even though the income levels of these families are more like those of families in which both biological parents are present (29).

Based on previous findings, it was expected that there would be significant differences in the prevalence of emotional and behavioral problems across family types and that learning disabilities would show similar but less pronounced differences. It was not expected that developmental delays would show significant variation by family structure, although there was the possibility that couples whose children had developmental difficulties would be more likely to get divorced than those with normal children.

### Developmental delays

The prevalence of developmental delays showed little significant variation across family types (table 1). The prevalence of developmental delays was 3.8 percent among children from mother-father families, 4.5 percent among children in mother-only families, 3.7 percent in mother-stepfather families, and 4.8 percent in all other family situations (children living with fathers only or fathers and stepmothers, with grandparents or other relatives, or in adoptive or foster families).

### Learning disabilities

There was significant variation across family types in the prevalence of learning disability, with children in disrupted or reconstituted families showing higher rates of learning problems than those in mother-father families. Children in mother-stepfather families appeared to show slightly higher rates of learning problems than those in mother-only families, but this may be attributable to the fact that black and Hispanic persons, with their lower rates of problem reporting, were overrepresented in the mother-only group but not in the mother-stepfather group. The prevalence of learning disabilities was 5.5 percent among children in mother-father families, 7.5 percent in mother-only families, 9.1 percent in mother-stepfather families, and 8.3 percent in other family situations (table 2).

### Emotional and behavioral problems

As expected, the frequency of emotional and behavioral problems showed the greatest variation across family types, with children in single-parent families and stepfamilies showing higher problem rates than those in mother-father families. Children in other types of families also showed elevated rates. The prevalence of emotional and behavioral problems was 8.3 percent in mother-father families, 19.1 percent in mother-only families, 23.6 percent in mother-stepfather families, and 22.2 percent in other family situations (table 3). Again, the frequency of problems among children in mother-only families may have been understated because of the large proportions of black and Hispanic persons in this group.

### Combined problems

Children in disrupted families were nearly twice as likely as those in mother-father families to have had a developmental, learning, or behavioral problem. The prevalences for children ages 3–17 years were 14.6 percent in mother-father families, 24.8 percent in mother-only families, 29.6 percent in mother-stepfather families, and 28.2 percent in other family types (table 4).

## Summary and conclusions

The data presented in this report show that developmental, learning, and behavioral disorders are among the most prevalent chronic conditions of childhood and adolescence. Overall, nearly 20 percent of young people ages 3–17 years were found to have had one or more of these conditions. By the time they reached ages 12–17 years, 1 in 4 adolescents, and nearly 3 in 10 male adolescents, had experienced one of these disorders. When very young children with developmental delays were included, the total number of U.S. children affected came to about 10.7 million.

As high as these figures may seem, it is altogether possible that they are underestimates of the true prevalence of the conditions. The only childhood disorders counted in NHIS–CH were those that had been recognized by parents or identified by physicians, psychologists, or teachers and communicated to parents with sufficient clarity that the parents were able to report them to survey interviewers. There is reason to believe that some developmental, learning, and emotional disorders of children are not recognized as such,

or the assessments of teachers or health professionals are not understood or not accepted by parents. Confusion over changing diagnostic terminology and simple forgetting of problems that occurred in the past probably work to reduce the reporting of these conditions as well.

Despite the limitations of parental reporting, it is useful to have data on the prevalence of psychological disorders in young people based on standard survey questions put to the parents of a large and nationally representative sample of children. Estimates derived from NHIS–CH provide national benchmarks on the overall frequency of recognized psychological disorders in children and on the relative frequency of such problems in different population groups. The findings with regard to overall prevalence were that 4.0 percent of all children 17 years of age and under had delays in growth or development, 6.5 percent of children ages 3–17 years had learning disabilities, and 13.4 percent had significant emotional or behavioral problems. The proportions of all children ages 3–17 years who had ever received treatment or counseling for the conditions were about 2 percent for developmental delays, just over 5 percent for learning disabilities, and more than 10 percent for emotional or behavioral problems.

These proportions fall within the range of prevalence estimates that have appeared in the literature. However, comparisons with an earlier NHIS–CH indicate that the proportion of young people who have received treatment or counseling for emotional or behavioral problems increased by more than 50 percent from 1981 to 1988, rising from 6.5 percent to 10 percent of all children ages 3–17 years. It is not clear whether the increase was due to an expansion of the underlying need for psychological help, to greater availability and acceptability of mental health services, or both. It is clear that the proportion of U.S. children not living with both parents has grown over time and that the prevalence of emotional problems and the rate of use of psychological services are higher for these children than for those living with both biological parents.

Survey findings with regard to variations in prevalence across demographic groups were generally in agreement with what was expected based on developmental theory and the results of previous research. Thus, the prevalence of a delay in growth and development was found to vary little with age, and most delays were detected within the first 2 years of life. In contrast, the prevalence of learning disabilities increased markedly as children reached school age, indicating that most of these conditions were detected in school. The lifetime prevalence of emotional or behavioral problems also rose with age, with significant increases continuing into the adolescent years.

Learning disabilities were nearly twice as common among males as among females, and the frequency of emotional or behavioral problems among males exceeded that among females by 36 percent. In contrast, developmental delay showed no significant gender differences. A similar pattern prevailed with respect to family income and parental education groups. Learning disabilities showed the greatest variation across these groups; emotional or behavioral problems showed significant but smaller fluctuations; and developmental delays showed practically no socioeconomic variation. Learning and behavioral problems were somewhat more common among children from low-income and low-education families than among those from more advantaged families. Even the largest differences were relatively modest, however. It is possible that a greater awareness of childhood problems among more educated parents and fuller survey reporting by these parents worked to artificially lessen the size of socioeconomic disparities in problem prevalence.

Black and Hispanic parents reported fewer developmental, learning, and behavioral problems in their children than did nonminority parents. However, teacher reports and school records suggest that psychological problems are more common among minority children. The disparity between parent- and school-based data may be due to cultural divergences in the awareness and acceptance of childhood psychological disorders or to differences in survey recall and reporting.

Young people from single-parent families or stepfamilies were 2 to 3 times more likely to have had emotional or behavioral problems than those who had both of their biological parents present in the home. Learning disabilities showed similar but less pronounced differences; delays in development varied little by family type.

The alarmingly high prevalence of emotional and behavioral problems among today's children and the observed relationship between family disruption and youthful problem behavior reinforce public concerns about the increasing number of U.S. children who are being raised in something other than harmonious two-parent families. The survey findings also underscore concerns about minority youth and the extent to which their learning and behavioral problems go unrecognized and untreated. Further research is needed to understand the apparent under-reporting of childhood learning and emotional problems by black and Hispanic parents and the extent to which it reflects inadequacies in the medical care and educational counseling that they and their children receive.

## References

1. Haggerty R, Roghmann K, Pless IB. Child health and the community. New York: John Wiley and Sons. 1975.
2. Gould M, Wunsch-Hitzig R, Dohrenwend BP. Estimating the prevalence of childhood psychopathology. J Am Acad Child Psychiatry 20:462–76. 1981.

3. Institute of Medicine. Research on children and adolescents with mental, behavioral and developmental disorders: Mobilizing a national initiative. Washington: National Academy Press. 1989.
4. Hetherington EM, Arasteh JD, eds. Impact of divorce, single parenting, and stepparenting on children. Hillsdale, New Jersey: Lawrence Erlbaum. 1988.
5. Shapiro S, McCormick MC, Starfield BH, Crawley B. Changes in infant morbidity associated with decreases in neonatal mortality. Pediatrics 72:408–15. 1983.
6. Norwood C. At highest risk: Environmental hazards to young and unborn children. New York: McGraw-Hill. 1980.
7. Alcohol, Drug Abuse, and Mental Health Administration. The high risk of cocaine, other drugs. ADAMHA News. Nov–Dec 1989.
8. Birenbaum A, Guyot D, Cohen HJ. Reality and policy in financing the health care of children and young adults with serious chronic conditions. Bronx, New York: Albert Einstein College of Medicine. 1989.
9. Casey RJ, Berman JS. The outcome of psychotherapy with children. Psychol Bull 98:388–97. 1985.
10. Weisz JR, Weiss B, Alicke MD, Klotz ML. Effectiveness of psychotherapy with children and adolescents: A meta-analysis for clinicians. J Consult Psychol 55:542–9. 1987.
11. Kohn A. Suffer the restless children. Atlantic Monthly 264(5):90–100. 1989.
12. Office of Technology Assessment. Children's mental health: Problems and services—A background paper. Washington: U.S. Congress. 1986.
13. Adams PF, Hardy AM. Current estimates from the National Health Interview Survey: United States, 1988. National Center for Health Statistics. Vital Health Stat 10(173). 1989.
14. National Center for Health Statistics. Health Interview Survey procedure, 1957–1974. National Center for Health Statistics. Vital Health Stat 1(11). 1975.
15. National Center for Health Statistics, Kovar MG, Poe GS. The National Health Interview Survey design, 1973–84, and procedures, 1975–83. National Center for Health Statistics. Vital Health Stat 1(18). 1985.
16. National Center for Health Statistics. Current estimates from the National Health Interview Survey: United States, 1981. National Center for Health Statistics. Vital Health Stat 10(141). 1982.
17. Poe GS. Design and procedures for the 1981 Child Health Supplement to the National Health Interview Survey. Working paper series. Hyattsville, Maryland: National Center for Health Statistics. 1986.
18. Achenbach TM. Developmental psychopathology. New York: John Wiley and Sons. 1982.
19. Boston Children's Medical Center, Feinbloom RI. Child health encyclopedia. Boston: Delacorte. 1975.
20. Tuma JM. Mental health services for children: The state of the art. Am Psychol 44(2):188–99. 1989.
21. Kazdin AE. Developmental psychopathology: Current research, issues, and directions. Am Psychol 44(2):180–7. 1989.
22. Patterson GR, DeBarsyshe BD, Ramsey E. A developmental perspective on antisocial behavior. Am Psychol 44(2):329–40. 1989.
23. Henker B, Whalen CK. Hyperactivity and attention deficits. Am Psychol 44(2):216–23. 1989.
24. Schaefer CE, Millman HL. How to help children with common problems. New York: Van Nostrand Reinhold. 1981.
25. Kovacs M. Affective disorders in children and adolescents. Am Psychol 44(2):209–15. 1989.
26. Emery RF. Marriage, divorce and children's adjustment. Developmental clinical psychology and psychiatry, vol. 14. Newbury Park, California: Sage. 1988.
27. Smith LH. The encyclopedia of baby and child care. Englewood Cliffs, New Jersey: Prentice-Hall. 1972.
28. Select Committee on Children, Youth, and Families. U.S. children and their families: Current conditions and recent trends. Washington: U.S. House of Representatives. 1989.
29. Zill N. Behavior, achievement, and health problems among children in stepfamilies: Findings from a national survey of child health. In: Hetherington EM, Arasteh JD, eds. Impact of divorce, single parenting, and stepparenting on children. Hillsdale, New Jersey: Lawrence Erlbaum. 1988.
30. Rutter M. The development of infantile autism. Psychol Med 4:147–63. 1974.
31. Zill N, Peterson JL. Marital disruption and children's need for psychological help. Washington: Child Trends. 1983.
32. Zill N. The school-aged handicapped: A statistical profile of special education students in elementary and secondary schools in the United States. Washington: National Center for Education Statistics. 1985.
33. Achenbach TM, Edelbrock CS. Behavioral problems and competencies reported by parents of normal and disturbed children aged four through sixteen. Monogr Soc Res Child Dev 46(1):1–82. 1981.
34. Rutter M, Tizard J, Whitmore K. Education, health and behavior. London: Longman Group. 1970.
35. Clarke-Stewart A. Child care in the family: A review of research and some propositions for policy. New York: Academic Press. 1977.
36. Zill N, Moore KA, Stief T. Adult welfare recipients as potential employees and the quality of the home environments experienced by welfare children: Analysis of data on AFDC families from national survey data bases. Progress report and summary of findings. Washington: Child Trends. 1990.
37. Gelles K. A profile of violence toward children in the United States. In: Gerbner G, Ross CJ, Zigler EF, eds. Child abuse: An agenda for action. New York: Oxford University Press. 1980.
38. Hampton RL, Newberger EH. Child abuse incidence and reporting by hospitals: Significance of severity, class and race. Am J Public Health 75(1):56–60. 1985.
39. Overpeck M, Moss A. Children's exposure to environmental cigarette smoke before and after birth: United States, 1988. Paper presented at the annual meeting of the American Public Health Association. Chicago. Oct. 22–26, 1989.
40. Herrnstein RJ. IQ in the meritocracy. Boston: Little Brown and Company. 1971.
41. Bryant EC, Glaser E, Hansen MH, Kirsch A. Associations between educational outcomes and background variables: A review of selected literature. Monograph of the National Assessment of Educational Progress. Westat, Inc. Denver: Education Commission of the States. 1974.

42. White KR. The relation between socioeconomic status and academic achievement. Psychol Bull 91(3):461–81. 1982.
43. National Assessment of Educational Progress. The reading report card, 1971–88: Trends from the nation's report card. Report no. 19-R-01. Princeton: Education Testing Service. 1990.
44. Rutter M, Giller H. Juvenile delinquency: Trends and perspectives. New York: Guilford Press, 1983.
45. Zill N, Peterson JL. Guide to federal data on children, youth, and families. Washington: Child Trends. 1990.
46. Andersen RM, Mullner RM, Cornelius LJ. Black-white differences in health status: Methods or substance? Milbank Mem Fund Q 65(suppl 1):72–99. 1987.
47. McLanahan S. The consequences of single parenthood for subsequent generations. Focus 2(3):16–21. 1988.

**Table 1. Percent of children 17 years of age and under who ever had a delay in growth or development, by age and selected characteristics: United States, 1988**

[Data are based on household interviews of the civilian noninstitutionalized population. The survey design, general qualifications, and information on the reliability of the estimates are given in the technical notes]

| Characteristic | All ages 17 years and under | 2 years and under | 3–5 years | 6–11 years | 12–17 years |
|---|---|---|---|---|---|
| | | | Percent | | |
| All children[1] | 4.0 | 4.3 | 4.4 | 4.1 | 3.6 |
| Sex | | | | | |
| Male | 4.2 | 4.0 | 4.6 | 4.0 | 4.4 |
| Female | 3.8 | 4.6 | 4.2 | 4.2 | 2.7 |
| Race | | | | | |
| White | 4.4 | 4.5 | 4.7 | 4.5 | 4.0 |
| Black | 2.1 | 2.5 | 1.4 | 2.3 | 2.0 |
| Hispanic origin | | | | | |
| Hispanic | 3.4 | 1.8 | 4.2 | 3.7 | 3.7 |
| Non-Hispanic | 4.2 | 4.7 | 4.5 | 4.2 | 3.6 |
| Family income | | | | | |
| Less than $10,000 | 5.4 | 6.9 | 5.8 | 5.4 | 3.8 |
| $10,000–$24,999 | 4.0 | 4.4 | 4.1 | 3.3 | 4.4 |
| $25,000–$39,999 | 4.0 | 2.6 | 6.1 | 4.5 | 3.3 |
| $40,000 or more | 3.9 | 5.0 | 2.5 | 4.3 | 3.6 |
| Place of residence | | | | | |
| MSA | 3.8 | 3.7 | 3.5 | 4.2 | 3.6 |
| Central city | 3.1 | 2.8 | 3.1 | 3.6 | 2.9 |
| Not central city | 4.2 | 4.4 | 3.8 | 4.6 | 4.0 |
| Not MSA | 4.7 | 6.1 | 7.1 | 3.7 | 3.8 |
| Assessed health status | | | | | |
| Excellent, very good, or good | 3.7 | 3.7 | 3.7 | 3.8 | 3.5 |
| Fair or poor | 15.2 | 21.0 | 24.5 | 14.0 | 8.5 |
| Mother's education | | | | | |
| Less than 12 years | 3.3 | 4.2 | 4.3 | 3.2 | 2.6 |
| 12 years | 4.2 | 4.8 | 5.4 | 3.8 | 3.8 |
| More than 12 years | 4.2 | 3.8 | 3.4 | 5.0 | 4.2 |
| Family structure | | | | | |
| Biological mother and father | 3.8 | 3.4 | 4.4 | 3.6 | 3.9 |
| Biological mother and stepfather | 3.7 | 10.1 | 3.6 | 4.5 | 2.6 |
| Biological mother only[2] | 4.5 | 5.5 | 3.8 | 4.6 | 4.2 |
| All other | 4.8 | 9.5 | 6.5 | 5.4 | 2.6 |

[1] Includes other races and unknown sociodemographic and health characteristics.
[2] Includes families in which the mother lived with the child's grandmother or other adult relative.

NOTE: MSA is metropolitan statistical area.

**Table 2. Percent of children 3–17 years of age who ever had a learning disability, by age and selected characteristics: United States, 1988**

[Data are based on household interviews of the civilian noninstitutionalized population. The survey design, general qualifications, and information on the reliability of the estimates are given in the technical notes]

| Characteristic | All ages 3–17 years | 3–5 years | 6–11 years | 12–17 years |
|---|---|---|---|---|
| | | Percent | | |
| All children[1] | 6.5 | 1.6 | 6.8 | 8.8 |
| Sex | | | | |
| Male | 8.6 | 1.7 | 8.4 | 12.1 |
| Female | 4.4 | 1.6 | 5.1 | 5.2 |
| Race | | | | |
| White | 6.7 | 1.6 | 7.0 | 9.2 |
| Black | 6.2 | 2.0 | 6.6 | 7.8 |
| Hispanic origin | | | | |
| Hispanic | 5.8 | 2.1 | 6.8 | 6.7 |
| Non-Hispanic | 6.6 | 1.6 | 6.8 | 8.9 |
| Family income | | | | |
| Less than $10,000 | 8.4 | 3.8 | 9.1 | 10.3 |
| $10,000–$24,999 | 7.2 | 1.4 | 7.3 | 10.6 |
| $25,000–$39,999 | 6.2 | 1.7 | 5.5 | 9.4 |
| $40,000 or more | 5.8 | 1.2 | 6.5 | 7.2 |
| Place of residence | | | | |
| MSA | 6.5 | 1.6 | 7.1 | 8.6 |
| Central city | 5.9 | 1.8 | 6.5 | 7.6 |
| Not central city | 6.9 | 1.5 | 7.4 | 9.1 |
| Not MSA | 6.5 | 1.8 | 5.9 | 9.5 |
| Assessed health status | | | | |
| Excellent, very good, or good | 6.3 | 1.4 | 6.5 | 8.6 |
| Fair or poor | 15.1 | 9.3 | 17.7 | 15.6 |
| Mother's education | | | | |
| Less than 12 years | 8.7 | 2.8 | 8.0 | 11.7 |
| 12 years | 6.8 | 1.9 | 7.5 | 8.5 |
| More than 12 years | 4.9 | 0.9 | 5.2 | 7.1 |
| Family structure | | | | |
| Biological mother and father | 5.5 | 1.2 | 5.7 | 8.2 |
| Biological mother and stepfather | 9.1 | 3.1 | 9.2 | 10.1 |
| Biological mother only[2] | 7.5 | 3.0 | 7.2 | 9.8 |
| All other | 8.3 | 1.1 | 10.6 | 8.6 |

[1] Includes other races and unknown sociodemographic and health characteristics.
[2] Includes families in which the mother lived with the child's grandmother or other adult relative.

NOTE: MSA is metropolitan statistical area.

**Table 3. Percent of children 3–17 years of age who ever had an emotional or behavioral problem that lasted 3 months or more or required psychological help, by age and selected characteristics: United States, 1988**

[Data are based on household interviews of the civilian noninstitutionalized population. The survey design, general qualifications, and information on the reliability of the estimates are given in the technical notes]

| Characteristic | All ages 3–17 years | 3–5 years | 6–11 years | 12–17 years |
|---|---|---|---|---|
| | | Percent | | |
| All children[1] | 13.4 | 5.3 | 12.7 | 18.5 |
| **Sex** | | | | |
| Male | 15.4 | 6.1 | 15.6 | 20.4 |
| Female | 11.3 | 4.5 | 9.8 | 16.5 |
| **Race** | | | | |
| White | 14.2 | 5.6 | 13.6 | 19.5 |
| Black | 10.3 | 2.4 | 9.2 | 15.1 |
| **Hispanic origin** | | | | |
| Hispanic | 12.0 | 4.5 | 13.4 | 14.8 |
| Non-Hispanic | 13.6 | 5.4 | 12.7 | 18.9 |
| **Family income** | | | | |
| Less than $10,000 | 15.8 | 4.7 | 16.2 | 22.5 |
| $10,000–$24,999 | 14.5 | 6.0 | 15.0 | 19.3 |
| $25,000–$39,999 | 13.4 | 5.9 | 11.5 | 19.6 |
| $40,000 or more | 12.8 | 4.8 | 11.4 | 17.6 |
| **Place of residence** | | | | |
| MSA | 13.7 | 5.2 | 12.9 | 19.1 |
| Central city | 13.6 | 4.7 | 13.1 | 19.1 |
| Not central city | 13.8 | 5.5 | 12.8 | 19.1 |
| Not MSA | 12.4 | 5.5 | 12.0 | 16.5 |
| **Assessed health status** | | | | |
| Excellent, very good, or good | 13.1 | 5.0 | 12.5 | 18.1 |
| Fair or poor | 23.3 | 8.4 | 20.4 | 31.8 |
| **Mother's education** | | | | |
| Less than 12 years | 13.6 | 5.2 | 12.3 | 18.5 |
| 12 years | 12.5 | 6.2 | 11.8 | 16.7 |
| More than 12 years | 13.7 | 4.2 | 13.3 | 20.1 |
| **Family structure** | | | | |
| Biological mother and father | 8.3 | 4.0 | 8.0 | 11.6 |
| Biological mother and stepfather | 23.6 | 12.0 | 19.6 | 29.1 |
| Biological mother only[2] | 19.1 | 6.6 | 18.9 | 25.5 |
| All other | 22.2 | 10.0 | 22.6 | 25.8 |

[1] Includes other races and unknown sociodemographic and health characteristics.
[2] Includes families in which the mother lived with the child's grandmother or other adult relative.

NOTE: MSA is metropolitan statistical area.

**Table 4. Percent of children 3–17 years of age who ever had a delay in growth or development, a learning disability, or an emotional problem that lasted 3 months or more or required psychological help, by age and selected characteristics: United States, 1988**

[Data are based on household interviews of the civilian noninstitutionalized population. The survey design, general qualifications, and information on the reliability of the estimates are given in the technical notes]

| Characteristic | All ages 3–17 years | 3–5 years | 6–11 years | 12–17 years |
|---|---|---|---|---|
| | | Percent | | |
| All children[1] | 19.5 | 9.5 | 19.1 | 25.2 |
| Sex | | | | |
| Male | 22.9 | 10.5 | 22.8 | 29.2 |
| Female | 16.0 | 8.5 | 15.4 | 20.8 |
| Race | | | | |
| White | 20.7 | 10.0 | 20.3 | 26.7 |
| Black | 14.9 | 5.0 | 14.8 | 19.5 |
| Hispanic origin | | | | |
| Hispanic | 17.2 | 8.5 | 19.6 | 19.2 |
| Non-Hispanic | 19.9 | 9.7 | 19.1 | 25.8 |
| Family income | | | | |
| Less than $10,000 | 22.8 | 11.5 | 23.8 | 28.6 |
| $10,000–$24,999 | 21.0 | 10.1 | 21.3 | 27.3 |
| $25,000–$39,999 | 19.5 | 11.3 | 17.6 | 26.0 |
| $40,000 or more | 18.6 | 6.8 | 18.0 | 24.1 |
| Place of residence | | | | |
| MSA | 19.6 | 8.5 | 19.5 | 25.4 |
| Central city | 18.7 | 8.0 | 19.2 | 24.1 |
| Not central city | 20.1 | 8.9 | 19.6 | 26.1 |
| Not MSA | 19.4 | 12.3 | 17.9 | 24.6 |
| Assessed health status | | | | |
| Excellent, very good, or good | 19.1 | 8.9 | 18.7 | 24.8 |
| Fair or poor | 35.3 | 25.7 | 35.7 | 39.3 |
| Mother's education | | | | |
| Less than 12 years | 20.3 | 10.2 | 18.4 | 26.2 |
| 12 years | 19.0 | 11.2 | 16.8 | 23.2 |
| More than 12 years | 19.3 | 7.3 | 19.4 | 26.3 |
| Family structure | | | | |
| Biological mother and father | 14.6 | 8.1 | 14.4 | 19.2 |
| Biological mother and stepfather | 29.6 | 14.4 | 27.0 | 34.5 |
| Biological mother only[2] | 24.8 | 11.7 | 24.5 | 31.4 |
| All other | 28.2 | 13.5 | 29.7 | 31.4 |

[1] Includes other races and unknown sociodemographic and health characteristics.
[2] Includes families in which the mother lived with the child's grandmother or other adult relative.

NOTE: MSA is metropolitan statistical area.

**Table 5. Proportion of children ever treated and proportion receiving special education for delays in growth or development, learning disabilities, and emotional or behavioral problems: United States, 1988**

[Data are based on household interviews of the civilian noninstitutionalized population. The survey design, general qualifications, and information on the reliability of the estimates are given in the technical notes]

| Treatment and special education status | Delays in growth or development | | Learning disabilities | | Emotional or behavioral problems | |
|---|---|---|---|---|---|---|
| | Percent of all children | Percent distribution of all children with condition | Percent of all children | Percent distribution of all children with condition | Percent of all children | Percent distribution of all children with condition |
| Ever received treatment or counseling for condition | Ages 0–17 years | | Ages 3–17 years | | Ages 3–17 years | Ages 3–17 years[1] |
| Total | 4.0 | 100.0 | 6.5 | 100.0 | 13.4 | 100.0 |
| Yes | 2.0 | 49.4 | 5.1 | 77.7 | 10.0 | 74.5 |
| Within last 12 months | 1.1 | 26.1 | 3.3 | 50.3 | 5.1 | 38.0 |
| More than 12 months ago | 0.9 | 23.3 | 1.8 | 27.4 | 4.7 | 35.3 |
| No | 2.0 | 50.6 | 1.5 | 22.3 | 3.4 | 25.5 |
| Attended special classes or special school in past 12 months because of condition | Ages 6–17 years | | Ages 6–17 years | | Ages 6–17 years[2] | Ages 6–17 years |
| Total | 3.9 | 100.0 | 7.8 | 100.0 | 6.9 | 100.0 |
| Yes | 0.9 | 22.7 | 5.5 | 69.9 | 1.7 | 24.9 |
| No | 3.0 | 77.3 | 2.3 | 30.1 | 5.2 | 75.1 |

[1] Includes unknown when treated; excludes unknown whether treated.
[2] Question about receipt of special educational services asked only of those who reported an emotional or behavioral problem that lasted 3 months or longer.

NOTE: Numbers may not add to totals because of rounding.

**Table 6. Percent distribution and cumulative distribution of children 3–17 years of age with developmental, learning, and emotional problems by age at which condition was first noticed, according to type of problem: United States, 1988**

[Data are based on household interviews of the civilian noninstitutionalized population. The survey design, general qualifications, and information on the reliability of the estimates are given in the technical notes]

| Age at which condition was first noticed | Delays in growth or development[1] | | Learning disabilities | | Emotional or behavioral problems[2] | |
|---|---|---|---|---|---|---|
| | Percent distribution | Cumulative percent distribution | Percent distribution | Cumulative percent distribution | Percent distribution | Cumulative percent distribution |
| At birth | 25 | 25 | 4 | 4 | 3 | 3 |
| Before 1 year | 20 | 45 | 2 | 6 | 2 | 5 |
| 1–2 years | 26 | 71 | 8 | 14 | 9 | 14 |
| 3–5 years | 12 | 83 | 25 | 39 | 25 | 39 |
| 6–8 years | 9 | 92 | 45 | 84 | 24 | 63 |
| 9–11 years | 5 | 97 | 11 | 95 | 15 | 78 |
| 12–17 years | 3 | 100 | 5 | 100 | 22 | 100 |

[1] Ages 0–17 years.
[2] Question about age when noticed asked only of those who reported an emotional or behavioral problem that lasted 3 months or longer.

**Table 7. Selected statistics on children 3–17 years of age with developmental, learning, and emotional problems, by type of problem: United States, 1988**

[Data are based on household interviews of the civilian noninstitutionalized population. The survey design, general qualifications, and information on the reliability of the estimates are given in the technical notes]

| Item | Delays in growth or development[1] | Learning disabilities | Emotional or behavioral problems[2] |
|---|---|---|---|
| Median age at first notice | 1 year 2 months | 6 years 7 months | 7 years 2 months |
| Unweighted *N* | 630 | 862 | 833 |
| Population estimate | 2,542,800 | 3,393,600 | 3,184,700 |

[1] Ages 0–17 years.
[2] These statistics include only those who were reported to have had an emotional or behavioral problem that lasted 3 months or longer.

## Technical notes

The estimates presented in this report are based on data from the National Health Interview Survey (NHIS), an ongoing survey of households in the United States conducted by the National Center for Health Statistics. Each week, a probability sample of the civilian noninstitutionalized population of the United States is interviewed by personnel of the U.S. Bureau of the Census. Interviewers obtain information about the health and other characteristics of each member of the households included in the NHIS sample.

NHIS consists of two parts: (a) a basic health questionnaire that remains the same each year and is completed for each household member and (b) special topics questionnaires that vary from year to year and usually are asked of just one person in each family. In 1988, the special topics included acquired immunodeficiency syndrome (AIDS) knowledge and attitudes, medical device implants, occupational health, alcohol, and child health. These data sets can be linked to provide additional sources for analysis.

The total sample interviewed for 1988 for the basic health questionnaire consisted of 47,485 households containing 122,310 individuals. The total response rate was 95 percent. For the National Health Interview Survey on Child Health (NHIS–CH), one sample child under the age of 18 years was selected from each family with children in that age range. Information about the sample child was collected by face-to-face interview with the adult member of the family present who knew most about the sample child's health, in most cases the mother. Interviews were completed for 17,110 children 17 years of age and under, 95 percent of those identified as eligible on the basis of the basic health questionnaire. The overall response rate for NHIS–CH was 91 percent, the product of the response rates for the basic and the child health questionnaires. Item nonresponse was 2–4 percent for the questions discussed in this report.

Because the estimates shown in this report are based on a sample, they are subject to sampling error. The standard error is a measure of the sampling error. Approximate standard errors for estimated percents in this report are determined using the formula

$$SE = \sqrt{\frac{(8{,}307\,p)(1-p)}{y}}$$

where SE is the standard error, $p$ is the estimated percent, and $y$ is the estimated base of the percent. The bases of the percents are shown in table I.

The approximate standard error of a difference between percents is given by the formula

$$SE\ (x_1 - x_2) = \sqrt{SE(x_1)^2 + SE(x_2)^2}$$

where $x_1$ and $x_2$ are the two percents being compared, $x_1 - x_2$ is the difference between them, and $SE(x_1)$ and $SE(x_2)$ are the standard errors of the two percents.

All differences cited in this report are statistically significant at the 0.05 level. The $t$-test, with a critical value of 1.96, was used to test all comparisons that are discussed. Lack of comment regarding the difference between any two estimates does not mean that the difference was tested and found not to be statistically significant.

**Table I. Number of children 17 years of age and under, by age and selected characteristics: United States, 1988**

[Data are based on household interviews of the civilian noninstitutionalized population. The survey design, general qualifications, and information on the reliability of the estimates are given in the technical notes]

| Characteristic | All ages 17 years and under | 2 years and under | 3–17 years | 3–5 years | 6–11 years | 12–17 years |
|---|---|---|---|---|---|---|
| | | | Number in thousands | | | |
| All children[1] | 63,569 | 11,360 | 52,209 | 10,748 | 20,966 | 20,495 |
| Sex | | | | | | |
| Male | 32,526 | 5,905 | 26,621 | 5,428 | 10,522 | 10,642 |
| Female | 31,043 | 5,455 | 25,588 | 5,320 | 10,414 | 9,854 |
| Race | | | | | | |
| White | 51,380 | 9,066 | 42,314 | 8,762 | 16,986 | 16,566 |
| Black | 9,820 | 1,810 | 8,009 | 1,526 | 3,267 | 3,217 |
| Hispanic origin | | | | | | |
| Hispanic | 7,239 | 1,274 | 5,965 | 1,263 | 2,519 | 2,182 |
| Non-Hispanic | 55,031 | 9,512 | 45,519 | 9,132 | 18,242 | 18,145 |
| Family income | | | | | | |
| Less than $10,000 | 7,924 | 1,705 | 6,219 | 1,342 | 2,760 | 2,118 |
| $10,000–$24,999 | 16,708 | 3,274 | 13,435 | 3,006 | 5,526 | 4,903 |
| $25,000–$39,999 | 15,737 | 2,750 | 12,986 | 2,800 | 5,207 | 4,979 |
| $40,000 or more | 16,071 | 2,432 | 13,638 | 2,473 | 5,234 | 5,931 |
| Place of residence | | | | | | |
| MSA | 48,314 | 8,793 | 39,521 | 8,132 | 15,886 | 15,504 |
| Central city | 18,972 | 3,763 | 15,210 | 3,275 | 6,102 | 5,833 |
| Not central city | 29,342 | 5,030 | 24,311 | 4,856 | 9,784 | 9,671 |
| Not MSA | 15,255 | 2,567 | 12,688 | 2,616 | 5,080 | 4,992 |
| Assessed health status | | | | | | |
| Excellent, very good, or good | 61,173 | 10,866 | 50,307 | 10,332 | 20,263 | 19,713 |
| Fair or poor | 1,788 | 375 | 1,413 | 290 | 509 | 615 |
| Mother's education | | | | | | |
| Less than 12 years | 12,479 | 2,118 | 10,362 | 1,841 | 4,104 | 4,419 |
| 12 years | 26,791 | 4,475 | 22,315 | 4,596 | 9,105 | 8,615 |
| More than 12 years | 22,899 | 4,484 | 18,416 | 4,120 | 7,422 | 6,874 |
| Family structure | | | | | | |
| Biological mother and father | 38,999 | 8,143 | 30,856 | 7,327 | 12,643 | 10,887 |
| Biological mother and stepfather | 4,477 | 109 | 4,369 | 396 | 1,789 | 2,184 |
| Biological mother only[2] | 13,716 | 2,392 | 11,323 | 2,196 | 4,573 | 4,555 |
| All other | 6,377 | 716 | 5,661 | 829 | 1,962 | 2,871 |

[1] Includes other races and unknown sociodemographic and health characteristics.
[2] Includes families in which the mother lived with the child's grandmother or other adult relative.

NOTE: MSA is metropolitan statistical area.

**Suggested citation**

Zill N, Schoenborn CA. Developmental, learning, and emotional problems: Health of our Nation's children, United States, 1988. Advance data from vital and health statistics; no 190. Hyattsville, Maryland: National Center for Health Statistics. 1990.

**Copyright information**

This report may be reprinted without further permission.

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service
Centers for Disease Control
National Center for Health Statistics
6525 Belcrest Road
Hyattsville, Maryland 20782

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE, $300

To receive this publication regularly, contact the National Center for Health Statistics by calling 301-436-8500

DHHS Publication No. (PHS) 91-1250

BULK RATE
POSTAGE & FEES PAID
PHS/NCHS
PERMIT No. G-281